

## MEMORANDUM

**To:** Matt Carpenter, ADOT  
Manuel Tapia, Jr., City of Nogales

**From:** David Fields

**Date:** May 25, 2006

**Subject:** Nogales Transit Study - Subtask 2-A: Transit Propensity

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### I. Introduction

Transit Propensity is a measure of the inclination for transit use among an identified population. The Transit Cooperative Research Program (TCRP) Report 28: *Transit Markets of the Future, The Challenge of Change*, outlines a series of demographic factors and corresponding levels of transit propensity, as measured against the overall community's propensity. The report identifies a set of demographic populations that are consistently more likely to use transit as their principal mode for commuting to work. A weighted factor is identified for each group that measures the strength of that group's transit propensity. For instance a factor of 1.18 indicates a reliance upon transit for commuting that is 18 percent higher evidenced by the overall community.

Please Note: Since the unique travel patterns of daily commuters crossing the US/Mexican border are not related to residents of Nogales, these trips are not included in this analysis. Transit demand generated by this population will be addressed in overall project planning.

## **II. Methodology – Measuring Transit Propensity**

For Nogales, the Project Team chose seven demographic populations outlined in the TCRP report, for the propensity analysis of 11 Census block groups within the Nogales city limits. The specific populations examined, with their transit propensity factors in parentheses, were:

- Hispanic residents (1.73);
- Residents 65 years old or more (1.10);
- Women residents (1.18);
- Limited mobility residents (2.41);
- Work-disabled residents (1.25);
- Households without a car (5.76); and
- Households with income below \$20,000 (1.04).

## **III. Calculating a Block Group's Transit Propensity**

The presence of each of these population groups within the 11 Nogales block groups was calculated, and measured as a proportion of the overall population, for each block group. This proportion was multiplied by the corresponding transit propensity factor for each population group.

As an example, in Census block group 1, tract 9961.02:

- 73.19 percent of residents are Hispanic;
- 7.81 percent of residents are aged 65 or older;
- 49.64 percent of residents are women;
- 5.20 percent of residents have limited mobility;
- 10 percent of residents have a work disability;
- 1.78 percent of households have no car; and
- 17.93 percent of households have incomes of less than \$20,000;

Each percentage figure was multiplied by the population group's corresponding propensity factor (as identified above). The resulting figures were summed among the seven population groups for each block group. This sum was then multiplied by the block group's overall density factor, measured as residents per square mile. This produced an overall transit propensity score for each block group. This score is essentially a measurement of the density of populations that have demonstrated the strongest inclination to depend upon regular transit use for commuting.

## **IV. Conclusions**

The methodology presented above provides a more precise tool for mapping transit inclined and transit dependent markets than population densities alone. As seen in Table 1, propensity of residents to use transit can be grouped by census tract. Tract 9962.02, block groups 1 and 2 offer significantly greater

propensity then the remainder of Nogales; these tracts represent Downtown to Western Avenue. High transit propensity can also be found east of Morley Avenue north of the border and north of Mariposa Road between I-19 and Grand Avenue.

In comparison, tract 9962, block group 1 and tract 9963, block group 1 (west of Mariposa Road, plus along Patagonia Highway) offer comparatively minimal transit propensity.

Figure 1 shows the mapped results of the transit propensity levels for the block groups within the City of Nogales.

**Table 1: Census Tracts in Order of Propensity**

<b>Propensity</b>	<b>Census Tract</b>	<b>Block Group</b>	<b>Propensity Score</b>
Very High	9964.02	2	26432
	9964.02	1	19546
High	9963	4	10208
	9962	2	8524
Moderate	9963	3	6032
	9964.01	2	5439
Low	9963	2	2755
	9964.01	1	2716
Very Low	9961.02	1	107
	9962	1	861
	9963	1	223

# Figure 1: Nogales Transit Propensity

